UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/649,260	08/28/2000	Marc Miller	EWG-104US	6782

23735	7590	10/12/2004

DIGIMARC CORPORATION
9405 SW GEMINI DRIVE
BEAVERTON, OR 97008

EXAMINER
LAVIN, CHRISTOPHER L

ART UNIT	PAPER NUMBER
2621	

DATE MAILED: 10/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary		Application No. 09/649,260	Applicant(s) MILLER ET AL.
		Examiner Christopher L Lavin	Art Unit 2621

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _28 August 2000_.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1 - 17_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1 - 17_ is/are rejected.

7)☐ Claim(s) _2,3 and 8_ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____.

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Specification

1.   Applicant is reminded of the proper language and format for an abstract of the disclosure.

2.   The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

3.   The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Claim Objections

4.   Claims 2, 3, and 8 are objected to because of the following informalities:

5.   In regards to claims 2 and 3, "claim 10" should be changed to "claim 1".

6.   In regards to claim 8, in the first line there is a typo, the word "mage" should be "image".

7.   Appropriate correction is required.

Claim Rejections - 35 USC § 102

8.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9.   Claims 4, 5, 9 – 11 are rejected under 35 U.S.C. 102(e) as being anticipated by

Rhoads (6,449,377)

10.   In regards to claim 4, Rhoads discloses in the paragraph starting at column 4,

line 31 that an image is divided up into regions (areas). In lines 42 – 45 in the same

column Rhoads discloses that line widths can either be a specific value or a range of

values.   Inherent in the system disclosed by Rhoads is a means for determining areas

which contain a line meeting the requirements needed to embed data otherwise the

system disclosed by Rhoads would not work. In lines 46 – 58 of the same column

Rhoads discloses that a watermark is inserted into the image by modulating the width of

the lines. Finally in the paragraph starting at column 4, line 64 Rhoads discloses that the

watermark in each area is controlled by binary data.

11.   In regards to claim 5, Rhoads discloses in lines 46 – 58 in column 4 that a

watermark is applied by modulating the line width ("line is controllably varied").

12.   In regards to claim 9, Rhoads discloses in the paragraph starting at column 4,

line 31 the step of dividing an image up into regions. In lines 42 – 45 in the same

column Rhoads discloses that line widths can either be a specific value or a range of values. Claim 9 calls for "generating a watermark tile which will carry watermark data." The so-called "watermark tile" in Rhoads is the "intermediate data signal" mentioned at column 5, line 7, which is multiplied by a scale factor for each region and then mapped to the region. The watermarking algorithm (column 5, line 18) generates the watermark tile, which carries the watermark data. Claim 9 further calls for "applying a digital watermark to said image in multiple areas..." The Rhoads patent meets that requirement too, as evidenced at column 5, lines 18 – 35. the digital watermark in Rhoads takes the form of an increase or decrease in luminance for each region (or area) of the mage. The watermarking algorithm clearly operates in multiple areas, namely areas A, C and D as discussed at column 5. Rhoads discloses the same column in the paragraph starting at line 64 that the intensity of the digital watermark is controlled by binary data.

13.   In regards to claim 10, claim 10 is the method claim of the system described in claim 4. Please see the rejection of claim 4.

14.   In regards to claim 11, claim 11 is the method claim of the system described in claim 5. Please see the rejection of claim 5.

15.   Claim 7 is rejected under 35 U.S.C. 102(e) as being anticipated by Todd (6,181,802).

16.   In regards to claim 7, Todd discloses in the Encoding Algorithm steps shown in column 7 that the image is divided into areas (step 1). In step 3 the activity (tonal value) is found, then in step 5b areas with low activity are marked. Activity can be considered

tonal value because it is a function of the pixel density within each block. Specifically, it

is a function of the "gradient of luminance in a particular direction" (column 8, lines 25 –

26). Low activity requires that the activity fall within a range, Todd further details the

distinguishing features between low activity and high activity in the paragraph starting at

column 8, line 66. In lines 22 – 24 in column 6 Todd discloses that the magnitude

(intensity) of the insertion can be varied according to the amount of activity in the block.

Todd further discloses in the paragraph starting at column 2, line 3 that the watermark is

placed so as not to be visible (no artifacting).

Claim Rejections - 35 USC § 103

17.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

18.   The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1.   Determining the scope and contents of the prior art.
2.   Ascertaining the differences between the prior art and the claims at issue.
3.   Resolving the level of ordinary skill in the pertinent art.
4.   Considering objective evidence present in the application indicating
obviousness or nonobviousness.

19.   This application currently names joint inventors. In considering patentability of

the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

20.   Claims 1 – 3, 12 – 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rhoads in view of Todd.

21.   In regards to claim 1, in the paragraph starting at column 7, line 34 Rhoads discloses that a watermarked image is scanned, creating a digital image. A digital image consists of an array of bits. Rhoads then discloses in the paragraph starting at column 4, line 31 that the image is divided into regions (tile sized areas). Further in lines 46 – 58 in column 4 Rhoads discloses that data is embedded in the image by changing line width. In the lines 42 – 45 at column 4 Rhoads discloses that line width can be specified at a particular size or can be varied (Range). Rhoads then specifies in the paragraph starting at column 4, line 59 that a secondary control value (binary data) determines the content of the watermarked image. Rhoads, however, does not disclose that the image is divided into secondary control areas, where each control area covers a portion of the image with a characteristic that falls within a particular range.

22.   Todd teaches in the encoding steps listed at column 7 in step 1 that the image is divided into areas then in 5b that the areas are then checked for characteristics, areas with the necessary characteristics are marked accordingly (secondary control areas).

Todd teaches that the secondary control areas can be based on lines. In the case of Todd, the range is one line per segment.

23.   Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to use the secondary control areas as taught by Todd to encode data into an image. As Rhoads teaches data is embedded by varying line width. Areas that do not have lines or have too many lines would not be good candidates for the watermarking operation, so by marking the areas that have the characteristics needed for watermarking, processing time could be saved.

24.   In regards to claim 2, Rhoads discloses in lines 42 – 45 in column 4, that line width can be specified at a particular width or can be varied, this constitutes a range.

25.   In regards to claim 3, Rhoads discloses in the paragraph starting at column 4, line 64 that intensity is the control value. The binary data sequence is the intensity of the watermark at a particular secondary control area.

26.   In regards to claim 13, Rhoads discloses in the paragraph starting at column 4, line 25 that the image is line art. Rhoads discloses in lines 42 – 45 in column 4, line width can be specified at a particular width or can be varied, this constitutes a range.

27.   In regards to claim 14, Rhoads as shown above in the rejection of claim 1 discloses a method of watermarking an image having everything in common with claim 14 except for using tone as a characteristic.

28.   Todd teaches in the steps for encoding algorithm in column 7 that the activity of a block is found in step 3 and then in step 5b that activity is used to mark secondary control areas. The activity is a measure of tone.

29.   Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to use tone as a characteristic for picking secondary control areas. Using tone as a characteristic for selecting secondary control areas might be an easier approach to picking control areas instead of trying to figure out which areas have only one line in them. Thus using tone could save processor time.

30.   In regards to claim 15, Rhoads discloses in the paragraph starting at column 4, line 25 that the image is line art. Rhoads discloses in lines 42 – 45 in column 4, line width can be specified at a particular width or can be varied, this constitutes a range. Finally Rhoads discloses in the paragraph starting at column 4, line 64 that binary data is used to control the intensity of the watermark.

31.   In regards to claim 16, Rhoads discloses in lines 46 – 58 that an image is watermarked by modulating the line width.

32.   In regards to claim 17, claim 17 is the system claim of the method described in claim 1. Please see the rejection of claim 1.

33.   Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rhoads in view of Schneider (6,404,908).

34.   In regards to claim 6, Rhoads as shown above in the rejection of claim 4 discloses a system of watermarking an image having everything in common with claim 4 except for using a filter to find lines.

35.   Schneider teaches in the column 6, line 25 that a filter can be used to detect lines.

36.   Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to use a filter to detect lines so that data can be embedded in the lines. By using the technique taught by Schneider to detect lines far fewer calculations are required as documented in the paragraph starting at column 5, line 66 ("Thus, line detection algorithms in accordance with the preferred embodiments are capable of generating line and direction images using significantly fewer computations than prior art algorithms").

37.   In regards to claim 12, claim 12 is the method claim of the system described in claim 6. Please see the rejection of claim 6.

38.   Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Todd in view of Dickey (4,231,656).

39.   In regards to claim 8, Todd discloses in the Encoding Algorithm steps shown in column 7 that the image is divided into areas or masks (step 1). In step 3 the activity (tonal value) is found, then in step 5b masks with low activity are marked. Low activity requires that the activity fall within a range, Todd further details the distinguishing features between low activity and high activity in the paragraph starting at column 8, line 66. In lines 22 – 24 in column 6 Todd discloses that the magnitude (intensity) of the insertion can be varied according to the amount of activity in the block. Todd further discloses in the paragraph starting at column 2, line 3 that the watermark is placed so as not to be visible (no artifacting). Todd, however, does not disclose that a half tone image should be converted to line art before being watermarked.

40.   Dickey teaches in the paragraph starting at column 4, line 14 that half-tone images can be converted into line art.

41.   Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to convert a half-tone image into line art before performing the watermarking as disclosed by Todd. By converting a half-tone image into line art before watermarking it will be easier to fine lines to perform watermarking on.
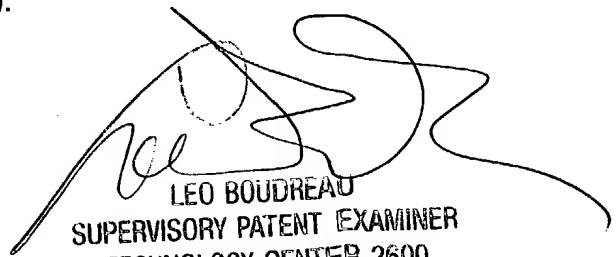
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher L Lavin whose telephone number is 703-306-4220. The examiner can normally be reached on M - F (8:30 - 5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Boudreau can be reached on (703) 305-4706. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CLL

LEO BOUDREAU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600